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Personnel

SCIENCE AND TECHNOLOGY AWARDS

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This instruction implements portions of AFD 36-28, **Awards and Decorations**, that cover Air Force-level awards for accomplishments in science and technology. The awards include the John L. McLucas Basic Research Award, the Harold Brown Award, the Research and Development Award, the Science and Engineering Award, the Cadet Research Award, and the AFIT Systems Engineering Award. This instruction does not apply to the Air Force Reserve or Air National Guard. All records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123 (will be AFMAN 33-363), *Management of Records*, and disposed of in accordance with the *Air Force Records Disposition Schedule (RDS)* located at <https://webrims.amc.af.mil/>.

SUMMARY OF REVISIONS

This revision 1) renames the Basic Research Award to the John L. McLucas Basic Research Award; 2) establishes two new awards: the Cadet Research Award and the AFIT Systems Engineering Award; 3) provides clarification of the purpose of each award (section 1.); 4) adds a one page limit to the supervisor's nomination letter (paragraph 5.1.); 5) deletes the requirement for names of spouse, children and parents in biographical data (paragraph 5.2.); 6) specifies use of AF Form 1206, **Nomination For Award**, for narrative write-ups, adds margins and type style for the narratives, and specifies specific narrative headings (paragraph 5.4.); 7) deletes the requirement for a list of published papers, articles, patents, and speeches (paragraph 5.5.); 8) breaks out selection process and criteria by award (section 6.); 9) adds the requirement for organizations to provide photographs of the winners and fund travel for presentation (paragraph 7.2.); 10) replaces bulleted paragraphs with numbered paragraphs; 11) provides minor edits to improve understanding and clarity, and 12) adds **Attachment 1**, Glossary of References and Supporting Information.

1. Purpose. The Air Force Chief Scientist, HQ USAF/ST, may give the following awards annually for significant accomplishments in science and technology in support of the Air Force mission.

1.1. The **John L. McLucas Basic Research Award**, named for the former Secretary of the Air Force, recognizes individuals that make outstanding contributions through scientific efforts and achievements of United States Air Force in-house basic research activities (budget activity 6.1 or equivalent).

1.2. The **Harold Brown Award**, named for the former Secretary of the Air Force, recognizes significant achievement in research and development (R&D) by one person that led to, or demonstrated promise of, a substantial improvement in the operational effectiveness of the Air Force. It may also be a translation of R&D results into increased operational capability or demonstrated leadership in applying guidance and direction to elements of the United States Air Force R&D Program to enhance Air Force capability.

1.3. The **Air Force Research and Development Award** recognizes accomplishments of military personnel working in the area of Applied Research or Advanced Technology Development (budget activity 6.2, 6.3 or equivalent), with emphasis on improving the technology readiness level, transitioning into acquisition programs, or direct fielding to operational forces.

1.4. The **Air Force Science and Engineering Award** recognizes personnel for outstanding contributions in the following areas of research, development, or engineering. One award may be given each year in each category, except that a separate team award may be given in the category of Exploratory or Advanced Technology Development.

1.4.1. **Research Management.** Given for noteworthy achievement in management of scientific research and development activities. Noteworthy management achievements include overcoming significant obstacles, significantly improving processes or dealing with complex problems.

1.4.2. **Exploratory or Advanced Technology Development.** Given for noteworthy achievements in areas of Applied Research or Advanced Technology Development (budget activity 6.2, 6.3 or equivalent). Emphasis is on improving the technology readiness level (TRL), transitioning into acquisition programs, or direct fielding to operational forces.

1.4.3. **Engineering Achievement.** Given for noteworthy achievements in engineering resulting in new applications of existing, mature technology (TRL 5 or greater) or improved design of components, subsystems, or complete systems for the Air Force. Achievements should be linked to specific Air Force missions.

1.4.4. **Manufacturing Technology.** Given for significant achievements in improving the technology to manufacture Air Force systems by reducing cost or complexity of manufacturing. Achievement benefits are specific and quantifiable.

1.5. The **Cadet Research Award** recognizes United States Air Force Academy (USAFA) and Air Force Reserve Officers Training Corp (AFROTC) cadets or teams for noteworthy achievements furthering USAF research in a science or technology area. One award may be given each year in each category of USAFA and AFROTC.

1.6. The **AFIT Systems Engineering Award** recognizes Air Force Institute of Technology (AFIT) students or teams for outstanding achievements in furthering systems engineering understanding in the United States Air Force. Only one award may be given each year.

2. Description of the Awards:

2.1. The winner of the John L. McLucas Basic Research Award receives a plaque symbolizing individual contributions to the Air Force, a certificate, and a cash award provided by the Air Force Office

of Scientific Research. The winner may wear the Air Force Recognition Ribbon (military) or Air Force Recognition Lapel Pin (civilian), as appropriate. Up to four honorable mention winners receive a certificate and a smaller cash award.

2.2. The winner of the Harold Brown Award receives a brass medallion embedded in a distinctive Lucite block. The winner also receives a certificate signed by the Secretary of the Air Force and the Chief of Staff of the Air Force, and the winner's name is engraved on a plaque permanently displayed near the office of the Secretary of the Air Force. The winner also may wear the Air Force Recognition Ribbon (military) or Air Force Recognition Lapel Pin (civilian), as appropriate.

2.3. Up to five winners of the Research and Development Award receive a plaque and a certificate. The winners may wear the Air Force Recognition Ribbon.

2.4. The winners of the Science and Engineering Award receive a certificate. The winners may wear the Air Force Recognition Ribbon (military) or Air Force Recognition Lapel Pin (civilian), as appropriate.

2.5. The winners of the Cadet Research Award receive a certificate. The winners may wear the Air Force Recognition Ribbon.

2.6. The winners of the AFIT Systems Engineering Award receive a certificate. The winners may wear the Air Force Recognition Ribbon (military) or Air Force Recognition Lapel Pin (civilian), as appropriate.

3. Eligibility Criteria:

3.1. **John L. McLucas Basic Research Award.** Air Force military or civilian individuals involved in some form of basic research may compete for this award. Selection criteria are based on outstanding contributions to basic research during the previous three calendar years. Honorable mention winners from previous years who have performed additional work in their subject area may also be nominated. Nominations are for individual effort. For research teams, the individual who is most responsible for the success of the effort should be submitted. Nominee's contributions:

3.1.1. Must be in a subject area that contributes to technology for the Air Force,

3.1.2. Must be clearly of basic research nature and be distinctive and of exceptional value in the field, and

3.1.3. Should be published or accepted for publication in a refereed scientific journal or equivalent.

3.2. **Harold Brown Award.** Any military or civilian individual of the Air Force engaged in some phase of R&D is eligible for this award. If the achievement was a team effort, submit the individual whose contributions were most responsible for the success of the work.

3.3. **Research and Development Award.** Any Air Force military individual working in Applied Research or Advanced Technology Development (budget activity 6.2, 6.3 or equivalent) are eligible for this award.

3.4. **Science and Engineering Award.** Any Air Force military or civilian individual or teams (Exploratory or Advanced Technology Development category only) may be nominated for contributions in the appropriate categories. Individuals cannot be submitted for more than one category in a single year.

3.5. **Cadet Research Award.** Any USAFA or AFROTC cadet or cadet team majoring in some area of science or technology is eligible for this award.

3.6. **AFIT Systems Engineering Award.** Any military or civilian student or student team of AFIT residence or civilian institution science or engineering programs is eligible for this award.

4. Submitting Nominations. Supervisors submit nominations for each award through their chain of command to the Chief Scientist of the Air Force, HQ USAF/ST. Submissions for the John L. McLucas Basic Research and Harold Brown Awards must reach HQ USAF/ST by 15 March. Submissions for the USAFA Cadet Research and AFIT Systems Engineering Awards must reach AF/ST by 15 April. Submissions for the Research and Development and Science and Engineering Awards must reach HQ USAF/ST by 15 May.

5. Package Contents. Award packages may be classified or unclassified. Each awards package will contain 8 copies of the following:

- 5.1. Supervisor's nomination cover letter, limited to one page.
- 5.2. Personal biographical data, to include
 - 5.2.1. Name.
 - 5.2.2. Grade.
 - 5.2.3. Current assignment, to include mailing address and telephone number.
 - 5.2.4. Education data, to include high school and college(s) attended, dates, areas of study, and degrees
- 5.3. Short (not to exceed 100 words) unclassified citation to accompany the award.
- 5.4. AF Form 1206, **Nomination for Award**, containing specific justification for the award. Justification may be in either bullet or narrative form. Limit justification to no more than two single spaced pages. If the electronic version of AF Form 1206 is not used, type style will be Times New Roman 12. Justifications should contain the following headings:
 - 5.4.1. Area of endeavor - A general description of the field of study or development.
 - 5.4.2. Description of the achievement - Specifically what the individual or team did, how well it was done, and what obstacles were overcome.
 - 5.4.3. Degree of completion - What work remains to transition the achievement to the next level of technology readiness.
 - 5.4.4. Uniqueness of the achievement - Originality of the work and why it is important to the field of study.
 - 5.4.5. Value of the achievement to the Air Force - Relevance and impact to the Air Force mission, including areas or specific programs into which the technology will transition.
- 5.5. DELETED
- 5.6. Copy of published or submitted article (John L. McLucas Basic Research Award only).
- 5.7. Letters of recommendation (if desired).

5.8. One AF Form 1001, **Award Recommendation Transmittal**, filled out through item 7 (John L. McLucas Basic Research Award only).

6. How Award Recipients Are Selected.

6.1. **John L. McLucas Basic Research Award.** The Chief Scientist will chose board members from the Air Force Office of Scientific Research, the Air Staff, and Secretariat who will make recommendations. The Chief Scientist will make the final decision after considering all inputs. Narratives will be graded by the following criteria (listed in priority order): research quality, originality, importance to the Air Force, degree of transition, importance in the field, and degree of completion.

6.2. **Harold Brown Award.** A board made up of the Assistant Secretary, Acquisition; the Vice Chief of Staff of the Air Force and the Chief Scientist will recommend a nominee to the Secretary of the Air Force, who selects the winner. Narratives will be graded by the following criteria (listed in priority order): importance to the Air Force, originality, research quality, importance in the Field and degree of completion.

6.3. **Research and Development Award.** The Chief Scientist will chose board members from the Air Staff, and Secretariat who will make recommendations. The Chief Scientist will make the final decision after considering all inputs. Narratives will be graded by the following criteria (listed in priority order): research quality, originality, importance to the Air Force, degree of transition, importance in the field, and degree of completion.

6.4. **Science and Engineering Awards.** The Chief Scientist will chose board members from the Air Staff, and Secretariat who will make recommendations. The Chief Scientist will make the final decision after considering all inputs. Narratives will be graded by the following criteria (listed in priority order):

6.4.1. **Research Management.** Originality, complexity, importance to the Air Force, and degree of completion.

6.4.2. **Exploratory or Advanced Technology Development.** Research quality, originality, importance to the Air Force, degree of transition, importance in the field, and degree of completion.

6.4.3. **Engineering Achievement.** Originality, quality of development, importance to the Air Force, importance in the field, and degree of completion.

6.4.4. **Manufacturing Technology.** Originality, importance to the Air Force, research quality, and degree of completion.

6.5. **Cadet Research Award.** The USAFA and AFROTC detachments will submit nominations to the Chief Scientist. Multiple nominations will be prioritized by the USAFA or AFROTC detachment, as appropriate, before submission. The Chief Scientist may chose reviewers from the Air Staff, and Secretariat who will make recommendations. The Chief Scientist will make the final decision after considering all inputs. Narratives will be graded by the following criteria (listed in priority order): Research quality, originality, importance in the field, importance to the Air Force, and degree of completion.

6.6. **AFIT Systems Engineering Award.** The Air Force Institute of Technology will submit nominations to the Chief Scientist. Multiple nominations will be prioritized by AFIT before submission. The Chief Scientist may chose reviewers from the Air Staff, and Secretariat who will make recommenda-

tions. The Chief Scientist will make the final decision after considering all inputs. Narratives will be graded by the following criteria (listed in priority order): Research quality, originality, importance in the field, importance to the Air Force, and degree of completion.

7. Award Announcements and Presentations.

7.1. The Air Force Chief Scientist will:

7.1.1. Notify the Chief of Staff and Secretary of the Air Force of the award winners.

7.1.2. Notify the appropriate MAJCOM or FOA commanders of the winners.

7.1.3. Arrange for the presentation of the awards at an appropriate time and place.

7.2. The winners' parent organizations will:

7.2.1. Forward a color 5x7 photograph of the winners (head and shoulders with U.S. flag in background) to AF/ST, no later than 30 days after notification.

7.2.2. Forward one picture, diagram or drawing depicting the results of the achievement. Electronic medium is acceptable, no later than 30 days after notification.

7.2.3. Provide travel for winners of awards to presentations.

8. Forms Adopted or Prescribed.

8.1. AF Form 1001, **Award Recommendation Transmittal**

8.2. AF Form 1206, **Nomination for Award**

DR. MARK J. LEWIS
Chief Scientist

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 36-28, *Awards and Decorations*

AFMAN 37-123 (will be AFMAN 33-363), *Management of Records*

Defense Acquisition Guidebook, December 20, 2004

Department of Defense Technology Readiness Assessment Deskbook, September 2003

Abbreviations and Acronyms

AF/ST—The office of the Air Force Chief Scientist

AFIT—Air Force Institute of Technology

AFROTC—Air Force Reserve Officers Training Corps

FOA—Field Operating Agency

MAJCOM—Major Command

USAFA—United States Air Force Academy

R&D—Research and Development

RDS—Records Disposition Schedule

TRL—Technology Readiness Level

Terms

Advanced Technology Development—Includes the development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments or tests in a simulated environment. It includes concept and technology demonstration of components and subsystems or system models. The results of this type of effort are proof of technological feasibility and assessment of subsystem and component operability and producibility rather than the development of hardware for service use. Efforts in this category have a direct relevance to identified military needs, and generally have Technology Readiness levels of 4,5, or 6. Efforts in this category do not necessarily lead to subsequent development or procurement phases, but should have the goal of moving out of Science and Technology (S&T) and into the acquisition process. Advanced Technology Development is generally identified with Budget Activity 6.3.

Applied Research—The systematic study to understand the means to meet a recognized and specific need. It is a systematic expansion and application of knowledge to develop useful materials, devices, and systems or methods. It may be oriented, ultimately, toward the design, development, and improvement of prototypes and new processes to meet general mission requirements. It may translate promising basic research into solutions for broadly defined military needs, short of system development. It includes studies, investigations, and non-system specific technology efforts. The dominant characteristic is that applied research is directed toward general military needs with a view toward developing and evaluating

the feasibility and practicality of proposed solutions and determining their parameters. Applied Research is generally identified with Budget Activity 6.2.

Basic Research—The systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high-payoff research that provides the basis for technological progress. Basic research may lead to: (a) subsequent applied research and advanced technology developments in Defense-related technologies, and (b) new and improved military functional capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support. Basic Research is generally identified with budget activity 6.1.

Budget Activity—RDT&E funding is sub-divided into seven separate activities denoted by account numbers. These are: basic research (6.1); applied research (6.2); advanced technology development (6.3); advanced component development and prototypes (6.4); system development and demonstration (6.5); RDT&E management support (6.6); and operational systems development (6.7). The Air Force's Science and Technology (S&T) Program consists of the 6.1, 6.2, and 6.3 accounts.

Refereed Scientific Journal—Publications reviewed by "expert readers" or referees prior to the publication of the material. After reading and evaluating the material, the referee informs the publisher if the document should be published or if any changes should be made prior to publication. Refereed materials are also referred to as Peer Reviewed.

Systems Engineering—The overarching process that a program team applies to transition from a stated capability need to an operationally effective and suitable system. Systems engineering encompasses the application of systems engineering processes across the acquisition life cycle (adapted to each and every phase) and is intended to be the integrating mechanism for balanced solutions addressing capability needs, design considerations, and constraints, as well as limitations imposed by technology, budget, and schedule. The systems engineering processes are applied early in concept definition, and then continuously throughout the total life cycle.

Technology Readiness Level (TRL)—A measure of technical maturity which enables consistent, uniform discussions across different types of technologies. There are nine levels of TRLs: TRL 1: basic principles observed and reported, TRL 2: technology concept or application formulated, TRL 3: analytical and experimental critical function or characteristic proof of concept, TRL 4: component or breadboard validation in laboratory environment, TRL 5: component or breadboard validation in relevant environment, TRL 6-system/subsystem model or prototype demonstration in a relevant environment, TRL 7: system prototype demonstration in an operational environment, TRL 8: actual system completed and qualified through test and demonstration, TRL 9: actual system proven through successful mission operations. More complete definitions and examples can be found in the *Defense Acquisition Guidebook* and the *DoD Technology Readiness Assessment Deskbook*.

Technology Transition—The transfer of technology from the technology developer to a technology recipient. Generally, this involves moving the technology to a higher technology readiness level or a more military-specific activity. Transition is ultimately successful upon incorporation into a system.

Table A1.1. Addresses.

HQ USAF/ST
1075 Air Force Pentagon
Washington, DC 20330-1075